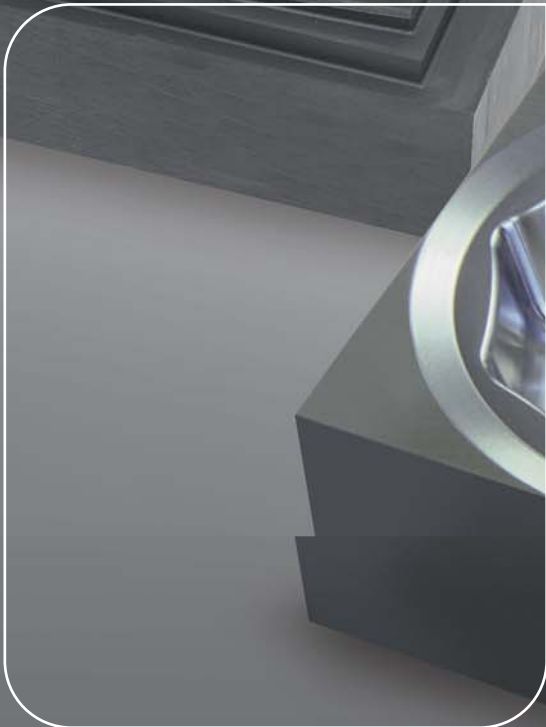


**MIKRON HSM 300**  
Dry Machining or  
Minimum-Quantity  
Cooling Lubrication



# Highlights

Dust or oil mist -  
The expandable machine with  
interface for automation.

Integrated dust/mist extraction unit

Constant accuracy thanks to  
the linear measuring systems

Interface  
for automation

HSC spindle  
30,000 rpm  
54,000 rpm

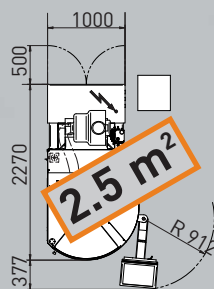
Easy access to the work table

Integrated  
tool magazine

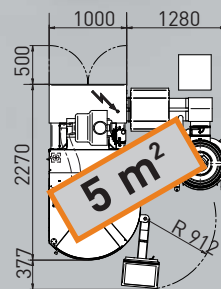
Powerful machine  
control system  
iTNC 530

## Integrated pallet magazine

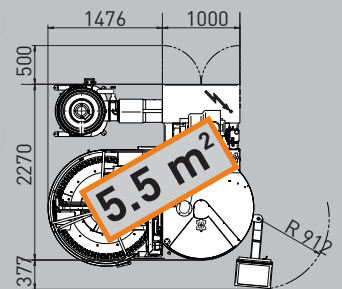
The tool magazine can be loaded during operation and operated very easily via CNC control system. This ensures automated production.



MIKRON HSM 300  
standard version



MIKRON HSM 300  
with dust extraction  
system



MIKRON HSM 300  
with dust extraction system  
and pallet magazine

Dust or oil mist -  
Consistent quality and precision  
are not a matter of luck...

#### Dust removal through air blast

The constant air blast towards milling tool removes dust safely and automatically during machining.



#### Minimum-quantity cooling lubrication

Minimum-quantity cooling lubrication with two nozzles for specific application of a microfine lubricant film, which fogs the cutting area at a high flow rate.

- Better surface quality
- Efficient lubrication of the cutting edge also at high rotational speed

#### Machine control system

Powerful latest generation contour control system. Heidenhain iTNC 530 is a versatile and flexible workshop-oriented machine control system that meets all requirements.

- Efficient workshop programming or external machine-independent program creation
- Parallel programming, free contour programming, user-definable sub-programs
- Quick processing thanks to a short set processing time
- Swivelling of machining level

#### Traversal paths

Longitudinal / transverse / vertical (X,Y,Z) mm 380 / 390 / 255

#### Tool spindle (40% ED, S6)

30,000 rpm HSK-E40 kW / Nm 8.3 / 4.4

54,000 rpm HSK-E32 kW / Nm 8.5 / 3.4

#### Process speed

Feed rate / rapid traverse (X,Y,Z)m / min 10 / 15

#### Work table

Clamping surface mm 410 x 325

Maximum table load kg 68

#### Tool magazine

HSK-E32 Stück 20 / 35

HSK-E40 Stück 18 / 27

#### Automation

Pallet size / number - / piece 50 x 50 / 48 ITS 50

Pallet size / number - / piece 54 x 54 / 48 Macro

Pallet size / number - / piece Ø 148 / 20 ITS 148

Pallet size / number - / piece Ø 156 / 20 MacroMagnum

Pallet size / number - / piece 240 x 240 / 10 GPS 240

Pallet size / number - / piece 280 x 280 / 7 Dynafix 280

Pallet size / number - / piece 320 x 320 / 7 UPC 320

**Control System** Heidenhain iTNC 530



#### Step-Tec

Since 1995 Step-Tec has developed, produced, sold and repaired motor spindles for leading manufacturers of machining centers for milling and drilling applications.

Step-Tec is able to manufacture fast running and precise heavy-duty spindles with an integrated motor. Thanks to these spindles machining hours are reduced drastically with optimum quality



GF AgieCharmilles machining centers are distinguished by extraordinary ergonomics. Compelling features of MIKRON HSM include an unparalleled accessibility regardless of the respective machine configuration.

# Applications

Quick and precise production of electrodes with complex geometries.

## Applications with dust extraction system

### Ribbed electrode

Material:		Graphite R8710					
		Diameter	Spindle speed	Feed	Width of cut	Depth of cut	Machining time
		D	n	v <sub>f</sub>	a <sub>e</sub>	a <sub>p</sub>	t
Operation	Tool	[mm]	[min <sup>-1</sup> ]	[mm/min]	[mm]	[mm]	[min]
Roughing	Toric end mill	6	22,000	4,000	4	0.5	6 min
Remaining material	Toric end mill	3	30,000	2,500	2	0.3	7 min
Roughing	Toric end mill	1.5	30,000	2,000	1	0.2	21 min
Finishing	Spherical cutter	1	30,000	1,800	0.2	0.05	29 min
Remaining mat. finish.	Spherical cutter	0.6	30,000	1,500	0.1	0.1	5 min
<b>Total machining time</b>							<b>68 min</b>



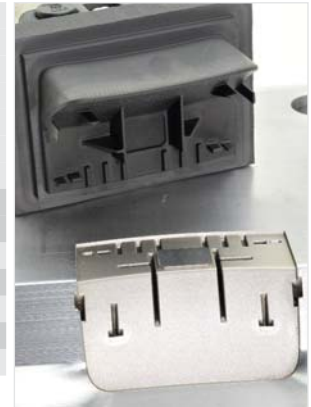
### Contour electrode

Material:		Graphite R8710					
		Diameter	Spindle speed	Feed	Width of cut	Depth of cut	Machining time
		D	n	v <sub>f</sub>	a <sub>e</sub>	a <sub>p</sub>	t
Operation	Tool	[mm]	[min <sup>-1</sup> ]	[mm/min]	[mm]	[mm]	[min]
Roughing	Toric end mill	6	18,000	4,000	2.5	0.5	3.5 min
Remaining material	Toric end mill	2	27,000	2,000	1.5	0.5	1 min
Roughing	Spherical cutter	1	30,000	800	--	0.2	6 min
Border finishing	Spherical cutter	0.6	30,000	500	--	0.08	14 min
Slots	Toric end mill	0.3	30,000	500	0.03	0.03	1.5 min
<b>Total machining time</b>							<b>26 min</b>



### Ribbed electrode

Material:		Graphite R8710					
		Diameter	Spindle speed	Feed	Width of cut	Depth of cut	Machining time
		D	n	v <sub>f</sub>	a <sub>e</sub>	a <sub>p</sub>	t
Operation	Tool	[mm]	[min <sup>-1</sup> ]	[mm/min]	[mm]	[mm]	[min]
Roughing	Toric end mill	6	20,000	6,000	3.5	1.5	8 min
Remaining material	Spherical cutter	2	29,000	3,500	0.5	0.4	5 min
Roughing	Spherical cutter	1	30,000	2,000	0.08	0.08	8 min
Finishing	Spherical cutter	1	30,000	4,000	0.05	0.05	29 min
<b>Total machining time</b>							<b>50 min</b>



High precision requirements,  
incomparable surface qualities,  
high accuracy.

### Applications with minimum-quantity cooling lubrication

#### Elephant mold core

Material:	K460						
DIN:	1.2510						
Composition:	100MnCrW4						
Hardness:	15 HRc						
		<i>Diameter</i>	<i>Spindle speed</i>	<i>Feed</i>	<i>Width of cut</i>	<i>Depth of cut</i>	<i>Machining time</i>
<b>Operation</b>	<b>Tool</b>	<b>D</b>	<b>n</b>	<b>v<sub>f</sub></b>	<b>a<sub>e</sub></b>	<b>a<sub>p</sub></b>	<b>t</b>
		<b>[mm]</b>	<b>[min<sup>-1</sup>]</b>	<b>[mm/min]</b>	<b>[mm]</b>	<b>[mm]</b>	<b>[min]</b>
Roughing	Shaft cutter	6	22,000	7,900	3	0.4	30''
Floor roughing	Shaft cutter	6	22,000	7,900	3	--	--
Preliminary fine mach.	Spherical cutter	3	30,000	3,500	0.2	--	1'04''
Surface finishing	Spherical cutter	2	30,000	2,400	0.05	--	7'20''
Detail finishing	Spherical cutter	0.3	30,000	200	0.015	--	83'20''
<b>Total machining time</b>							<b>92'14''</b>



#### Oval mold core

Material:	K460						
DIN:	1.2510						
Composition:	100MnCrW4						
Hardness:	15 HRc						
		<i>Diameter</i>	<i>Spindle speed</i>	<i>Feed</i>	<i>Width of cut</i>	<i>Depth of cut</i>	<i>Machining time</i>
<b>Operation</b>	<b>Tool</b>	<b>D</b>	<b>n</b>	<b>v<sub>f</sub></b>	<b>a<sub>e</sub></b>	<b>a<sub>p</sub></b>	<b>t</b>
		<b>[mm]</b>	<b>[min<sup>-1</sup>]</b>	<b>[mm/min]</b>	<b>[mm]</b>	<b>[mm]</b>	<b>[min]</b>
Roughing	Shaft cutter	6	22,000	7,900	3	0.4	38''
Floor roughing	Shaft cutter	6	22,000	7,900	3	--	--
Preliminary fine mach.	Spherical cutter	3	30,000	3,500	0.2	--	42''
Finishing	Spherical cutter	2	30,000	1,500	0.02	--	4'06''
<b>Total machining time</b>							<b>5'26''</b>



#### Copper-tungsten electrode

Material:	Tungsten						
DIN:	44759						
Composition:	75% W, 25% Cu						
Hardness:	10 HRc						
		<i>Diameter</i>	<i>Spindle speed</i>	<i>Feed</i>	<i>Width of cut</i>	<i>Depth of cut</i>	<i>Machining time</i>
<b>Operation</b>	<b>Tool</b>	<b>D</b>	<b>n</b>	<b>v<sub>f</sub></b>	<b>a<sub>e</sub></b>	<b>a<sub>p</sub></b>	<b>t</b>
		<b>[mm]</b>	<b>[min<sup>-1</sup>]</b>	<b>[mm/min]</b>	<b>[mm]</b>	<b>[mm]</b>	<b>[min]</b>
Roughing	Shaft cutter	4.5	18,000	1'900	3.8	0.65	1'18''
Preliminary fine mach.	Spherical cutter	1.5	10,000	400	0.05	0.15	5'22''
Finishing	Spherical cutter	0.5	20,000	200	0.035	0.1	12'55''
<b>Total machining time</b>							<b>19'35''</b>



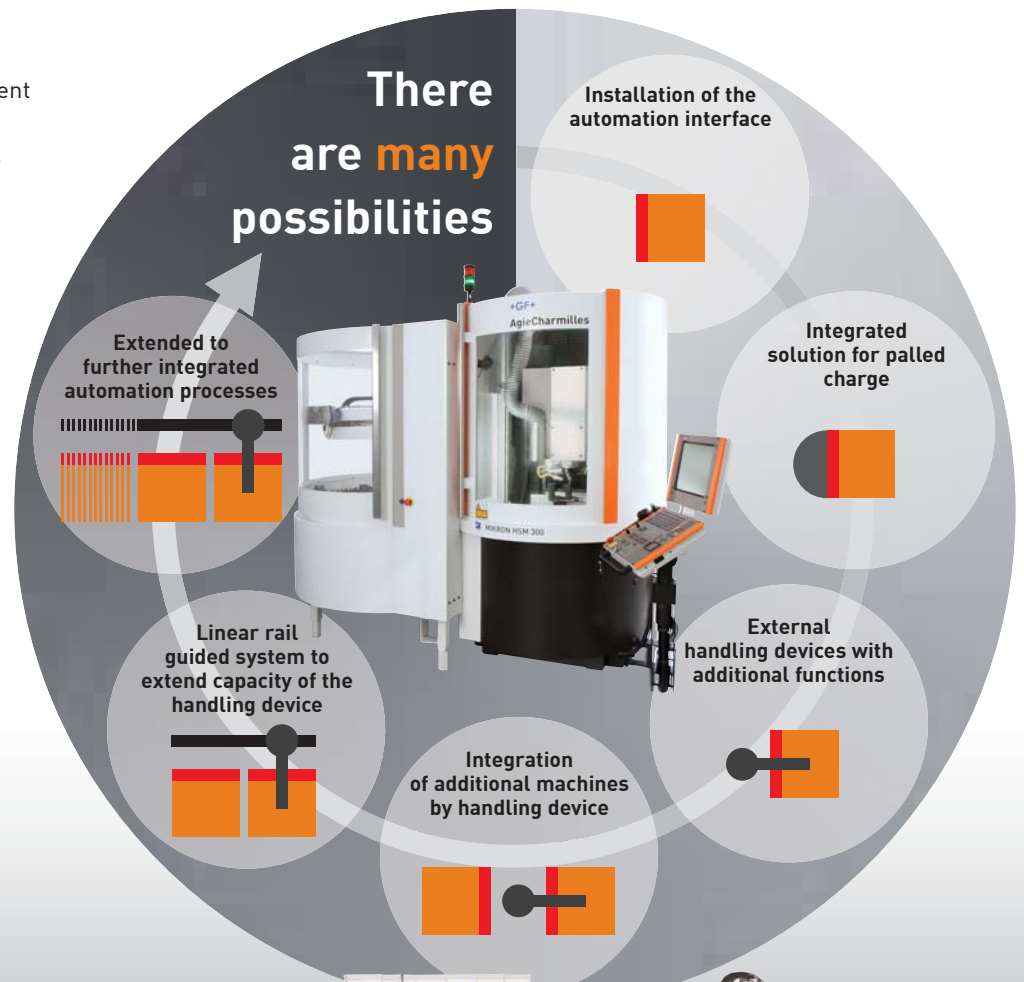
## The machine of the future!

MIKRON HSM 300 can be operated in any configuration level with high process safety.

### MIKRON HSM 300 - The machine of the future!

It can be operated in several different configuration levels.

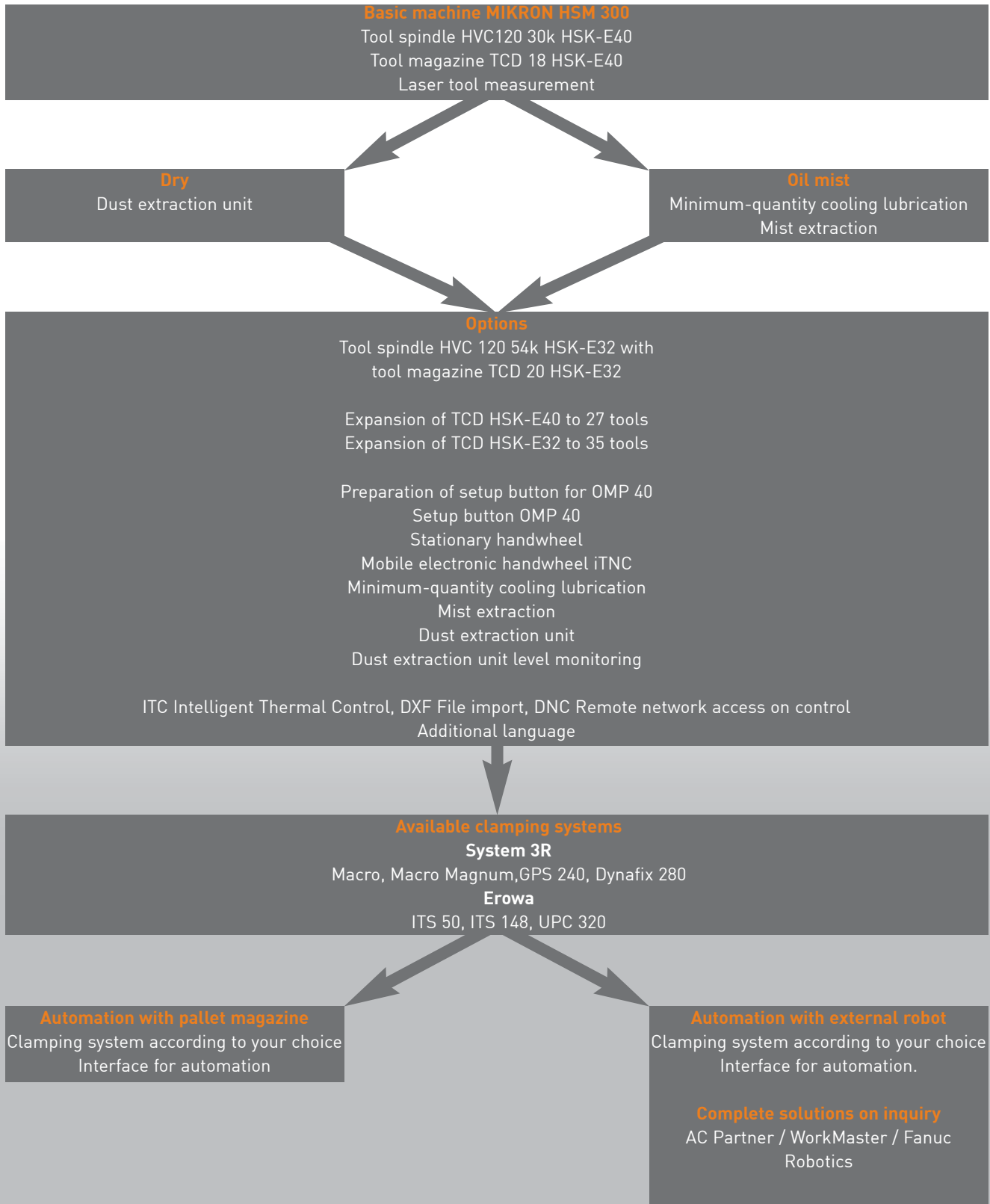
As stationary machine without tool automation for dry or oil mist lubricated machining and autonomous manufacturing cells with integrated tool automation by GF AgieCharmilles.



MIKRON HSM 300 also cuts a fine figure in a total system.

## Dust or oil mist?

Configure the machine according to your wishes.



## At a glance

### Achieve more

We commit ourselves to a promise.  
That promise is "Achieve more."  
It's a commitment to create the right  
conditions for our customers to obtain  
competitive results.  
When our customers win, we win.

### GF AgieCharmilles

We enable our customers to  
run their businesses efficiently  
and effectively by offering  
innovative Milling, EDM and  
Automation solutions.  
A comprehensive package of  
Customer Services completes  
our proposition.

**+GF+**

**AgieCharmilles**